Attachment 7.2

Airport Impact and Mitigation Management Study (AIMMS)

AVIATION TECHNICAL ADVISORY COMMITTEE

April 10, 2003

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Memorandum

Date: March 26, 2003

To: ATAC

From: SCAG Aviation Staff

RE: AIMMS Action Item

Recommended Action:

Present comments to the Aviation Task Force, as needed. ATAC members are asked to please bring written or oral comments to the April, 2003 ATAC meeting.

Background:

At the March, 2003 Aviation Technical Advisory Committee meeting, Mr. Michael Armstrong, SCAG, presented the Airport Impact Mitigation and Management Study (AIMMS) report. The report was drafted by SCAG in 1985. For a detailed account of Mr. Armstrong's presentation please refer to Item 4.1, "March 13, 2003 Minutes", included in this agenda packet (please note the March, 2003 minutes have not been approved by ATAC yet).

The entire AIMMS report was included in the March 2003 ATAC agenda. For your convenience the Executive Summary and the Introduction are included in this attachment, following this memo.

Staff would like ATAC comments on AIMMS to take to the Aviation Task Force. At the April ATAC meeting there will be an open discussion on AIMMS. Here are some questions to think about when preparing a response:

- In theory, is AIMMS feasible?
- Are there other strategies that would be more effective?
- What would be needed to implement this type of program?
- What would be the economic and/or environmental impact on: Airports? Airlines? Passengers? Cities? Residents?
- Would this type of program be beneficial for the entire region (in terms of economics, quality of life and mobility)?

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Executive Summary

SCAG policies support increased air service, but only if associated environmental impacts can be mitigated. The Airport Impact Mitigation and Management Study (AIMMS) objectives respond to this position.

The AIMMS study was prompted by a projected shortfall of capacity at air carrier airports in the 1990s, and uncertainties about the development of new airports to meet that shortfall. As a means of reducing the capacity shortfall, AIMMS would seek to better utilize existing airports; at the same time, it would mitigate adverse impacts. The study methodology is unique and has little precedent to draw upon.

In its current phase, AIMMS provides a data base, a methodology, and an illustration of the methodology; it does not make recommendations. AIMMS is a tool to be used by a policy forum that will make the recommendations.

Mitigation strategies will be developed in the next phase of the AIMMS work, while the policy forum reviews the AIMMS data and technical assumptions. The policy forum will then apply alternative mitigation strategies and recommend air service levels.

In Chapter III, this document redefines the constraints at each airport, stating them in terms of noise, ground access, and air quality impacts rather than limits on air operations and number of passengers. The redefinition uses the base year of 1982, at which time the airlines, anticipating a federal mandate, began converting their fleets to quieter aircraft. Impacts were measured at both the actual level of operations and the level permitted by the 1982 constraints. (The constraints constitute a ceiling that cannot be exceeded in the future, but only the impacts exceeding the constrained level would be mitigated.)

The impacts of the airport system on the environment and on ground access for the horizon year 2000, as stated in long-range airport plans, are measured. These constitute the "2000 constrained system." These year-2000 impacts are then compared with the 1982 constrained airport system to ascertain any changes (Chapter IV). The findings indicate that, for the system as a whole, noise will be reduced, air quality will improve slightly, and ground access will become worse.

The noise reduction is seen as a "window of opportunity": part of the reduction can be allocated to local communities as reduced noise impacts and part can be allocated to airports as increased air service. Thus, even with decreased noise, the 2000 constrained system serves 6.6 million more passengers than does the 1982 constrained system. This will accommodate planned increases in air service at Burbank, John Wayne, and Long Beach Airports.

Chapter V presents several airport performance measures based on noise-impact equity and the differing noise characteristics of fleet mixes at individual airports. These measures, which are hypothetical, show how the noise window of opportunity in the year 2000 could be allocated between reduced community noise impacts and increased air service. In the

illustration below, 64% of the noise window for the airport system is devoted to communities; this results in 36,641 fewer persons inside the 65 CNEL noise contour, compared with the 1982 constrained airport system. The 36% of the noise window devoted to increased air service results in serving an additional 12.1 million annual passengers (MAP) -- the amount of traffic served by a medium-sized air-carrier airport. The system produced in the illustration is labeled as the "2000 adjusted system," and is disaggregated by airport.

2000 Adjusted Airport System

Airport	Allocation to Communities[1]	Population Remaining Inside 65 CNEL	Allocation to Air Service (Millions of Annual Passengers)[2]	Total MAP[3]
Burbank	4,500	7,820	1.379	5.695
John Wayne	79	1,265	2.357	8.636
Long Beach	286	286	1.931	3.178
Los Angeles	27,700	97,139	4.668	44.668
Ontario	4,076	53,676	1.726	11.550
Total	36,641	160,186	12.061	73.727

1. Reduced residential population inside the 65 CNEL compared with the 1982 constrained level.
2. Millions of additional annual air passengers served.
3. Millions of annual passengers (MAP).

The increase of 12.1 MAP in the 2000 adjusted airport system is in addition to the increase of 6.6 MAP in the 2000 constrained airport system. Together, these increases provide service for an additional 18.7 MAP in the year 2000 -- a significant increase above the service levels of the 1982 constrained system.

As noted earlier, this illustration is not a recommendation; it may change when the AIMMS methodology is employed by a policy forum. However, the sample illustration indicates some general findings about conditions and trends that may be useful to report. These are summarized below.

- Dividing the year 2000 noise window of opportunity can enable the airport system to serve air passengers at levels above those of the 1982 airport constraints while reducing noise impacts on the community.

- Air service added through the AIMMS methodology could be significant, but will not solve the expected shortfall in airport capacity. Even though an additional 18.7 MAP could be accommodated, nearly 30% of air passenger demand will remain unserved by the turn of the century.

- Despite the application of airport performance measures tending toward equity of noise impacts, the sample illustration of AIMMS produces an airport system which remains inequitable. Communities around LAX and

Ontario would absorb a disproportionate share of the region's aircraft noise.

- Using the AIMMS methodology, the additional air service theoretically made possible by dividing the noise window of opportunity cannot be achieved because ground access impacts will worsen by the year 2000. The AIMMS methodology ties together the impacts of noise, ground access, and air quality; thus, air service cannot be increased unless all three impacts are reduced below the 1982 constrained level. To meet this challenge, the development of mitigation strategies for airport ground access will be a strong focus in the next phase of AIMMS.

- The sample illustration produces higher pollutant emissions at Burbank, John Wayne, and Long Beach Airports, but significantly lower emissions at LAX and Ontario Airports in the year 2000. Although this means that the airport system as a whole will have lower emissions than the 1982 constrained system, the improvement is not considered significant since it does not attain the goals mandated for the South Coast Air Basin. However, within the AIMMS methodology, the improvement does permit increased air service.

- Air pollutant emissions at Ontario Airport will decline significantly by the year 2000, compared with the 1982 constrained level. This finding suggests a need to re-examine Ontario's existing constraints of 12 MAP or 125,000 operations. Those constraints, set by the California Air Resources Board, used higher emission factors for 1985 and do not reflect lower emission factors for the year 2000.

- All-cargo air operations at Ontario Airport have grown at a phenomenal rate since 1982. Those operations count as part of the existing constraint of 125,000 operations, so they lower Ontario's capacity to serve air passengers. There is a clear need to develop reliable forecasts of all-cargo operations through the year 2000, and to examine the issue of air cargo at a policy level.

The next phase of AIMMS is planned for 1986. As noted earlier, impact mitigation strategies will be developed in that phase, along with companion studies of air cargo and airport ground access. A policy forum will make its own adjustment in the noise window of opportunity, apply alternative mitigation strategies, and make recommendations.

I. INTRODUCTION AND BACKGROUND

A. Study Objectives and Context

1. Study Objectives

The Airport Impact Mitigation and Management Study (AIMMS) objectives respond to adopted SCAG policies which support increased air service, but only on condition that any resulting environmental impacts be mitigated. The AIMMS objectives are:

- o To increase air service (passengers or operations) without increasing environmental/ground access impacts by mitigating those impacts.
- o To establish a method to demonstrate that the first objective can be achieved.
- o To define "equity" or equitable relief in terms of impacts.

The purpose of this study is to meet the second objective by developing a method, or "tool," to achieve the first objective. Consequently, the study presents a methodology and illustrates its use, but does not make recommendations relative to the first objective. It is anticipated that an apapropriate policy forum will use the methodology from this study in a subsequent phase of the AIMMS process to make actual mitigation tradeoffs and thereby achieve the first objective.

The AIMMS study introduces equity as one factor in the mitigation methodology. Equity is an important factor in the SCAG region because of the unequal distribution of air service and resulting environmental impacts. Consequently, the definition of equitable relief in terms of impacts is a major objective of the AIMMS process.

2. Study Context

The airport system is part of a larger transportation system. It has linkages to the ground transportation system, inter-regional travel facilities, other land uses, and environmental quality. While not all of those linkages are pursued in this study, they are the larger context into which the airport system and this study fit.

B. Definitions

There have been various perceptions of several terms commonly used in the constraints issue. Their meaning in this study are described below.

- o Constraint: An airport constraint is a policy restriction to air service volume at an airport which is not based on facility capac

ity limits or airspace capacity limits. A restriction of this nature is usually motivated by adverse environmental and ground access impacts on communities surrounding an airport. In the past, constraints have been expressed as either passenger volume limits or as aircraft operations limits. This study will redefine constraints in terms of environmental and ground access impacts.

- o Mitigation: Mitigation refers to the mitigation of airport-generated environmental and ground access impacts above each airport's constrained service level.

- o Management: Management refers to the management of air service levels at the region's air carrier airports so that service may be increased without increasing impacts above those at the constrained operations level.

- o Airport: Airport refers to one of the five existing air carrier airports in the SCAG metropolitan region. Those airports are Burbank, John Wayne, Long Beach, Los Angeles, and Ontario (Figure I-1).

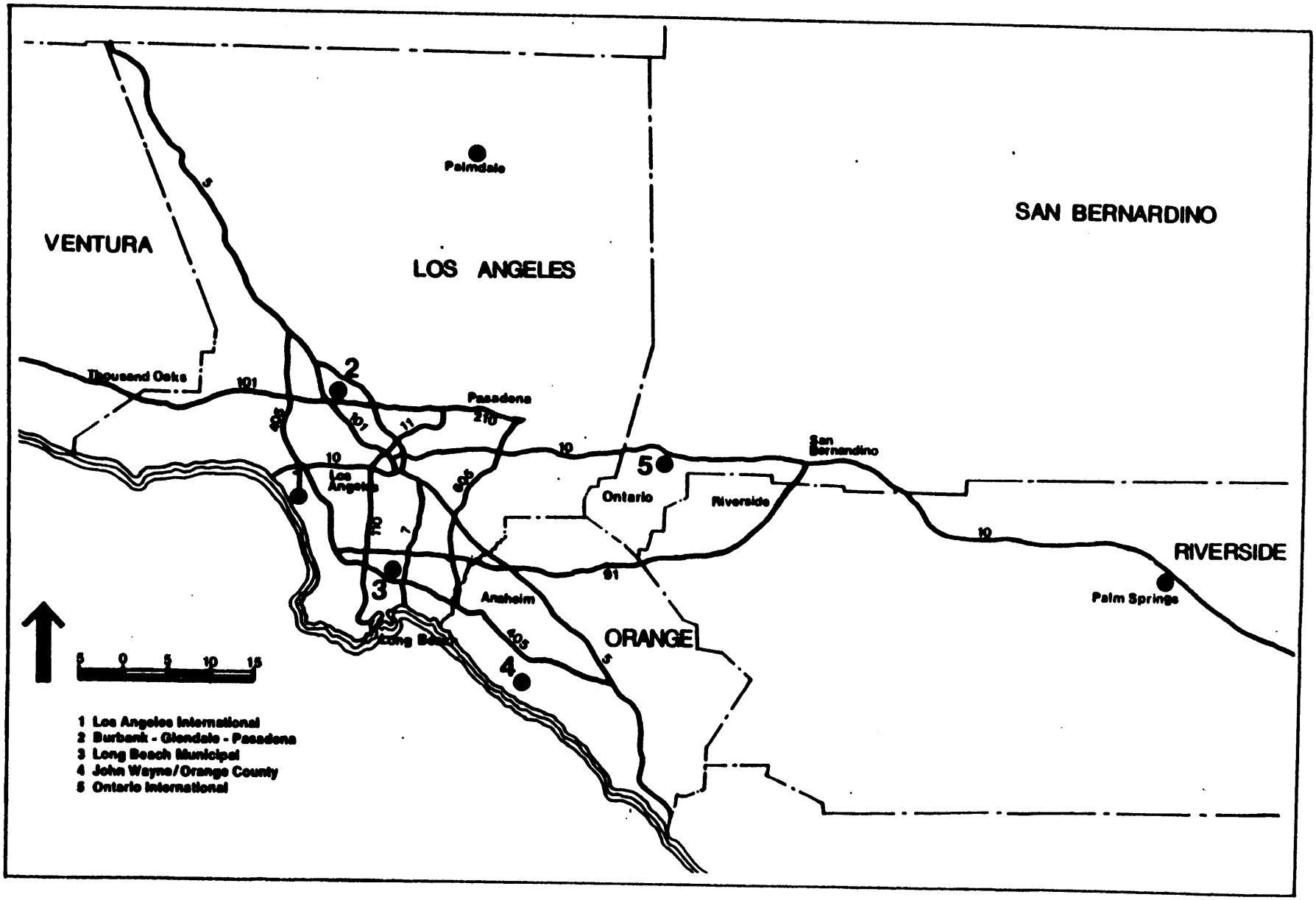
C. Historical Review

AIMMS grows out of the triple problems of increasing air passenger demand, associated environmental impacts, and limited opportunities to build new air carrier airports. Those problems have developed over the relatively brief span of thirty years. In the mid-1950s, they did not exist; air-passenger demand was limited and most air carrier aircraft used quiet, reciprocating engines. With the introduction of jet aircraft in the late-1950s, environmental impacts increased dramatically and the first noise complaints were heard. In addition, population and air passenger demand increased steadily. For example, from 1973 to 1983 the number of air passengers in the SCAG region increased from 25.6 million annually to 42.9 million. Those numbers represent a 67% increase in the space of a single decade and brought about today's airport problems. Not only were existing residential areas impacted, but also new ones.

The growing problems described above were detected early and led to the first of SCAG's regional airport studies which was conducted from 1969 to 1973. That study was inconclusive and did not lead to the selection of a new air carrier airport site. However, the Los Angeles Department of Airports did identify a new airport site at Palmdale, although it has yet to be built. The failure to build a new airport during the early- and mid-1970s led to airport policy constraints which were set in place as a way to minimize or halt further growth of adverse environmental impacts.

Following the imposition of airport policy constraints, SCAG conducted its second regional aviation system study from 1978 to 1982. That study respected airport policy constraints and sought to identify new air carrier airport sites to meet a projected capacity shortfall by 1995. The study initially identified a site in the Los Angeles-Long Beach Harbor, but that site was eventually set aside. A subsequent

FIGURE I-1
STUDY AREA EXISTING AIR CARRIER AIRPORTS



site-search identified MCAS El Toro and MCB Camp Pendleton as potential sites deserving further study. However, there has not been a firm regional commitment to either of these sites. This SCAG study suggested that urbanization of the metropolitan area and airspace congestion largely preclude the establishment of a large new air carrier airport in or near the urban core.

The situation described above has resulted in two activities. The first is a series of ANCLUC and Part 150 noise studies at existing air carrier airports. The second is this study which seeks to increase air service levels, but only by mitigating impacts. Both of these activities have been enhanced by recent technology improvements related to aircraft noise reduction.

This study is designed to address two problems associated with airport policy constraints. The first problem with constraints is that they are expressed differently at different airports. At one airport, the constraint is the number of annual passengers, at others it is the number of daily flights, and at one it is the number of flights related to operational and noise source indices. The second problem with constraints as currently defined is that they do not directly relate to the problems they are attempting to control, i.e., noise impacts, ground traffic congestion, and air-pollutant emissions. Existing constraint definitions also fall to provide a method with which impacts can be mitigated. These problems led to a SCAG aviation policy which calls for the redefinition of constraints into impact performance measures. The purpose of this study is to provide the constraint redefinition and to develop a mitigation and management tool for policy makers.

D. Current Efforts

Growth in aviation demand and public concern over adverse environmental impacts of airport operation have led to a number of planning studies by individual airport operators in recent years. These studies, which include master plans, environmental impact reports (EIRs), airport noise control and land use compatibility studies (ANCLUCs), and Part 150 noise studies, are identified below along with their status as of October 1985.

1. Los Angeles International Airport

In 1978, the City of Los Angeles Department of Airports published and adopted the LAX Ground Access Study and EIR prepared by a team of consultants led by Deleuw Cather & Company. The EIR analyzed the impacts associated with a 40 MAP LAX (at an unspecified date) and alternatives for accommodating that level of activity. The Department subsequently initiated a series of major construction projects. Projects which have been completed include the double-decking of the central terminal area roadway, two new passenger terminal buildings, expanded auto parking facilities, and various airfield improvements.

In late 1984, the Department of Airports completed a three-year ANCLUC/Part 150 Study for LAX in cooperation with neighboring jurisdictions and aviation interests. A Noise Control Program (NCP) was adopted, although at a more modest level than had been desired by adjacent communities, along with an adopted 1987 noise contour map. The FAA approved 28 of the 41 noise control measures recommended by the ANCLUC, and federal funding applications for several NCP implementation projects have been submitted in 1985. However, the City of El Segundo filed suit against other participants in the ANCLUC and that suit has now yet been resolved. Until the court case is resolved, the FAA will not release federal funds for the NCP projects.

A proposed LAX Capacity Control Program to regulate passenger usage was drafted in the early 1980s and remains under discussion. To date, there is no mechanism for implementation or enforcement of the City's 40 MAP constraint.

2. Ontario International Airport

In the mid-1970s, the Los Angeles Department of Airports proposed significant expansion of Ontario Airport. An EIS adopted in 1978 analyzed the potential impacts of a new parallel runway and associated improvements to allow the airport to serve 14 MAP by 1995. The new runway was subsequently constructed. In 1979, an amended airport permit issued by Caltrans imposed a condition set by the State Air Resources Board to limit airport expansion to 12 MAP due to air quality impacts and to require additional study of the ground access impacts resulting from expansion.

As a response to the State permit conditions, an EIR for Ground Access and Terminal Expansion, prepared for the Department of Airports by SCAG, was published and adopted in 1982. The EIR analyzed a program of recommended off-airport facility improvements. Anticipated Federal funding for road improvements have not been received to date.

In 1984 the Department applied for and received Federal funding for an ANCLUC/Part 150 Study at Ontario. The objective of the two-year study is to identify and evaluate airport operating and land-use pattern scenarios designed to achieve maximum compatibility between the airport at 12 MAP and surrounding communities. The study is scheduled to begin in the fall of 1985.

3. Burbank Airport

In 1981 the Burbank-Glendale-Pasadena Airport Authority published a draft Airport Master Plan Update, prepared by the consulting firm of Ralph Parsons Company, which contained recommendations for operational and facility improvements and environmental compatibility. An EIR was not prepared and the Master Plan has not been adopted.

In 1982 the Authority proposed the replacement of the existing passenger terminal due to its violation of current FAA safety regulations regarding separation of runways and buildings. An EIR/EIS for Replacement Passenger Terminal, prepared by the consulting firm of PRC Speas, was published and adopted in 1984. The new terminal, one of the features of the unadopted Master Plan, will be designed to serve 4.3 MAP by 1992. Construction has not yet begun.

In late 1984 the Authority prepared a draft Noise Abatement Plan which identified and evaluated a range of operational facility, and land-use alternatives for mitigating aircraft noise impacts. Based on this document, a program for noise abatement will follow. A Part 150 noise study is now underway.

4. John Wayne Airport

In 1980 a John Wayne Airport Master Plan, EIR, and ANCLUC Plan were prepared for the County of Orange by the consulting firm of VTN. The draft Master Plan proposed expansion of operations at the airport to serve 6 MAP by the year 2000. In a subsequent lawsuit against the County, the EIR was found to be invalid, thereby negating implementation.

A revised draft Airport Master Plan. Land Use Compatibility Plan, and EIR/EIS, prepared by the consulting firm of CH2M Hill, were published in 1984. The new Master Plan proposed a two-phase expansion of operations at John Wayne, from the existing 41 air carrier average daily departures (ADD) to 55 ADD in 1985, and to 73 ADD by 1990 upon completion of several construction projects including a new passenger terminal. The airport would serve up to 10 MAP by 1990. The Land Use Compatibility Plan proposed County purchase of noise-impacted property and subsequent redevelopment to compatible use. The land-use plan would serve as the major environmental mitigation for the Master Plan.

To date, the County has adopted the first phase of the revised Master Plan (allowing air-carrier operations to increase from 41 ADD to 55 ADD this year). Following that move, the City of Newport Beach filed suit against the County of Orange. Settlement of that case resulted in a number of conditions including a limit of 4.75 MAP until 1990, and a limit of 8.4 MAP through 2005. Other limitations were placed on terminal size and aircraft fleet mix. The County rescinded official opposition to a new airport and will promote FAA funding of groups seeking to develop an additional airport.

5. Long Beach Airport

In 1979 the City of Long Beach published and adopted an Airport Master Plan and EIR, prepared by the consulting firm of Ralph Parsons Company. The Plan proposed gradual expansion of operations at the airport to serve 1.7 MAP by 1988 and 2.5 MAP by 1998.

A subsequent EIR, which refined the 1979 Master Plan and EIR, was published and adopted by the City in 1981.

Based on these documents, an ordinance was enacted by the City in 1983, which set noise and operations limits, constraints on general aviation, and fines for noise violations. The FAA opposed the ordinance and court action temporarily relaxed the City restrictions. A Long Beach Airport ANCLUC/Part 150 Study, suggested by the FAA, was initiated in 1984 and will soon be completed.

E. Existing Data

Environmental data generated by airport operations in recent planning studies and reports cannot be compiled to form a set of systematic regional data. Because the impact data were prepared by different sponsors at different times for different projects, there is little uniformity and comparability among the airports in the SCAG region. Variations in the selection of base years, forecast years, technical assumptions, and data elements are apparent. Table I-1 below indicates the significant difference in the years used to generate the available impact data for noise, ground access, and air quality.

TABLE I-1

AIRPORT DATA BASE/FORECAST YEARS

	Noise		Ground Access		Air Quality	
Airport	Base Year	Forecast Year	Base Year	Forecast Year	Base Year	Forecast Year
LAX	1982	1987	1976	unspecified	1975	1995
Ontario	1978	1985	1979	1995	1978	1985
Burbank	1982	1992	1982	1987, 1992	1982	1987, 1992
John Wayne	1983	1990, 2005	1983	1990, 2005	1982	1990, 2005
Long Beach	1979	1988, 1998	1979	1988, 1998	1979	1987

Some of the existing impact data have been generated by technical assumptions which are open to question. Fleet mix assumptions, which are key determinants of both noise and air quality impacts, serve as prime examples. Under FAA regulations now in effect, air carriers must operate either Stage 2 of Stage 3 aircraft, but it is difficult to specify the future proportion of each for an airport's total operations. Also, some of the older airport forecasts (e.g., Ontario) utilize a fleet mix that no longer appears realistic because of the recent and anticipated introduction of newer-generation aircraft. Even some of the more recent impact forecasts do not account for the newest quiet aircraft (the BAe-146), the introduction of which is now for ahead of original estimates.

There are also differences in the data elements used to describe impacts. Regarding noise, for example, only two of the airports (LAX and Burbank) have quantified impacts in terms of number of acres, number of dwelling units, and population, for both base and forecast years. In

terms of ground access impacts, as another example, estimates of base year and forecast year daily trips and peak-period (or peak-hour) trips, and their distribution to the surrounding road network, have not been consistently documented.

Another problematic issue is the relationship between environmental impact data and airport constraints. Two airports (LAX and Ontario) currently have explicit passenger-level constraints. Two airports (John Wayne and Long Beach) currently utilize an operations-level constraint, for which number of passengers is variable depending on the assumed fleet mix. One airport (Burbank) currently has a noise-related constraint but has not specified an ultimate level of passenger activity.

F. Constraints Studies in Other Regions

SCAG surveyed airport operators and planning agencies in other regions to ascertain what work haws been conducted on the subject of airport constraints. The survey revealed that most areas view the subject of constraints differently than the SCAG region, so their study approach is different. Areas are grouped by their general approach to the subject of airport constraints for the discussion below.

1. Constraints as Physical Capacity

The survey of various airport operators and planning agencies suggests that the AIMMS approach has little precedence to draw on. Most airport planning agencies in other regions view airport capacity solely in terms of physical airfield and airspace capacity. For that reason, noise, air quality, and ground access impacts are not seen as constraints, but as impacts to be mitigated while airports expand to their physical capacity. The following metropolitan airports follow this pattern:

- New York: The Port Authority of New York and New Jersey operates JFK, LaGuardia, and Newark airports. All Three airports are believed to have potential physical capacity to handle future demand in their market areas. The Port's policy is to provide physical improvements to the airports to allow them to handle demand most efficiently. Environmental and ground access impacts are not considered as constraints to airport development.

- Boston: The Massachusetts Port Authority, operator of Boston-Logan Airport, has not attempted to establish a policy constraint. The Port continues to expand the airport while attempting to mitigate the environmental impacts of the expansion. Noise is a serious problem, and mitigation measures include a preferential runway system and a restriction of night operations to Stage 3 aircraft. However, the level of operations which will generate noise impacts which would preclude further expansion is an issue which has not yet been addressed.

- Atlanta: The Atlanta Regional Planning Commission indicated that the emphasis in Atlanta is to obtain capital improvements which will allow the region's one commercial airport to expand to its maximum capacity. Once that capacity is reached, a second airport will be built on land already purchased for that purpose. Noise is viewed as a problem, but not as a constraint.

- Seattle: The Seattle area's only commercial airport, Sea-Tac, is believed to have sufficient capacity to accommodate passenger demand for at least twenty years into the future. As airport traffic increases, the operator (Port of Seattle) will probably continue to mitigate noise impacts through purchase of nearby residences, thereby slowly removing incompatible land uses from the area. In addition, mitigation measures referred to as "transaction assistance," "neighborhood reinforcement," and "insulation cost-sharing" have been implemented. No new airports are being considered. A shortfall of capacity is projected at general aviation airports, so the Pugdet Sound Council of Governments is studying potential strategies for lifting policy constraints at those facilities.

- San Diego: Studies are underway to allow physical improvements to San Diego's Lindbergh Field. Noise is a problem, but has not generated a policy constraint. A Part 150 noise study will begin in the near future.

- Minneapolis/St. Paul: The Metropolitan Council of the Twin Cities Area indicates that, although there is no policy constraint in effect at Minneapolis/St. Paul Airport, the noise issue is making further expansion difficult. However, the official policy of the region opposes construction of a new commercial airport, and there is no policy limiting traffic at the existing airport. If the noise problem becomes too serious, the airport will probably purchase surrounding residential neighborhoods rather than restrict the expansion of air traffic. Various noise mitigation programs are being considered, including the diversion of some commuter and general aviation flights to general aviation fields. (While it is felt that some of these general aviation fields could have noise-related constraints, these constraints have not yet been defined.) One mitigation measure not being emphasized is the Part 36 aircraft noise reductions. A noise-level measurement methodology called "peak-level analysis" is used, and the noise reductions based upon this methodology constitute a relatively small amount of mitigation.

- Denver: The major capacity constraint on Denver's airport is airspace congestion. Various measures to increase airspace capacity are presently being studied, and plans are being made for a new airport to be constructed when the present airport can no longer expand its capacity.

- o Chicago: The policy of the City of Chicago, which operates the region's three airports, is that environmental considerations should not prevent the airports from being expanded to their physical capacity. Present plans call for meeting future demand through increased operations at O'Hare and Midway Airports.

2. Constraints as Environmental Impacts

Two other regions were found which view constraints in terms of environmental impacts and are, therefore, close to the approach taken in the SCAG region.

- o Dallas/Fort Worth: Love Field, the former major airport of Dallas, cannot expand to its capacity due to noise sensitivity of the surrounding community. The noise problem prompted the state to restrict the airport to short-haul flights, effectively placing a policy constraint on the facility. In addition, the City of Dallas has adopted a policy limiting the noise-impact zone to a specified area. There is little pressure to lift these constraints, due to the nearby presence of Dallas/Ft. Worth Airport, which is not constrained by noise and is not close to reaching its maximum capacity. The situation in Dallas is, therefore, not completely comparable to that found in the Los Angeles area.

- o San Francisco Bay Area: The Bay Area is served by three commercial airports located in San Francisco, Oakland, and San Jose. San Francisco Airport has a noise-based policy constraint of 31 MAP. The region's other two commercial airports also experience noise problems, so the Metropolitan Transportation Commission (MTC) has studied policies for distributing noise impacts between the three airports. Using specified fleet-mix assumptions, the MTC projected the noise impact of various alternatives, in terms of population within the 65 CNEL contour. It was found that these noise impacts were minimized when the proportion of flights at Oakland Airport increased relative to the other airports. Based on this consideration, as well as on the sufficiency of projected demand for Oakland Airport, the region adopted a policy of increasing the proportion of flights serving Oakland. Rather than adopting a limitation on number of flights, the noise impact at each airport for a given year was projected, assuming the desirable number of flights and a gradual conversion to State-3 aircraft. This impact, stated in terms of population within the 65-CNEL contour, became the recommended limitation for each airport. However, if an airport impacted more than the stated number of residents, but a certain number of affected houses were insulated, the airport would still be considered to be within its limit.

The Bay Area appears to be the most similar to the Los Angeles region, as all airports there have noise problems, and policies are needed to determine the extent to which each airport should

expand. The "noise budget" concept used in the Bay Area has potential for use in this region. In effect, it constrains each airport according to its performance in the most critical area, noise. However, it gives the airport operator latitude to determine whether the noise limits will be met through flight limitations, condemnation, or other mitigation measures. Moreover, it discourages expansion at the airports having the worst location in terms of adjacent land uses.

G. Study Overview

1. Current Phase

The material contained in this document (Chapter II-V) represents work in the current phase of AIMMS. It is primarily a staff effort to develop a system-level data base and methodology to be used in the next phase. Components of the current phase are noted briefly below.

- Due to the problem of different technical assumptions used by different airport operators, a common set of assumptions are presented for all five airports (Chapter II).

- An impact data base in a common base-year has been developed for all five airports (chapter III). Noise, ground access, and air quality data are presented for 1982 at actual air service levels and at constrained air service levels. This data base effectively redefines airport constraints in environmental and ground access terms.

- Impacts are measured again for the year 2000 to establish another common data base. Impacts in year 2000 are compared to those in 1982 to identify any reduced impacts resulting from sources other than regional mitigation strategies. Such reduced impacts are identified as "windows of opportunity" (Chapter IV). Windows emerge only for the noise impact.

- Criteria are presented to make a "cut" in the noise window of opportunity at each airport. A sample cut is made to illustrate how part of the noise reduction can be given to local communities as reduced noise impacts, and part can be given to air carriers to achieve a modest increase in air service (Chapter V). Resulting ground access and air quality impacts are also measured. This completes the methodology, or "tool" for the AIMMS process.

2. Next Phase

The next phase of the AIMMS process will shift focus to a policy forum which will guide the process and make policy recommendations regarding mitigation strategies and air service levels. Staff will provide technical support for the initiatives of the policy forum. Components of the next phase are presented below.

- The policy forum will review the technical assumptions, data bases, and criteria used in Chapters II-V. Changes recommended by the forum will be made to the AIMMS document.

- The policy forum will make its own "cut" in the window of opportunity, and Chapter V will be rewritten to reflect recommendations of the forum.

- In concert with the policy forum, staff will develop impact mitigation strategies and costs. That work will become Chapter VI of this document.

- Staff will next conduct tradeoff analysis of alternative mitigation scenarios developed by the policy forum. That work will become Chapter VII of this document.

- The policy forum will choose and recommend mitigation strategies and air service levels for the existing airport system. The recommendations will become the regional standards for constraints and air service.